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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/932,639	08/17/2001	Neal G. Skinner	2000IP000227	6326

20558 7590 06/05/2002

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EXAMINER
SEDIGHIAN, REZA

ART UNIT	PAPER NUMBER
2633	

DATE MAILED: 06/05/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	09/932,639	SKINNER NEAL G.
	Examiner	Art Unit
	M. R. Sedighian	2633

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 August 2001* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-61* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-61* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *17 August 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2 .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 11-12, 27-28, and 50-51 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

As to claims 11, 27, and 50, it is not clear what is meant by "... the first optical coupler receiving separate optical wavelength bands from multiple tunable filters". Figures 3 and 4, shows optical couplers that receive optical signals from the fiber optic line. Figure 5, shows tunable filters are located between two optical couplers. It is not clear how the first optical couplers receive the optical signal from multiple tunable filters.

As to claims 12, 28, and 51, it is not clear what is meant by "... each of the tunable filters receiving a relatively broad optical wavelength band from the second optical coupler". Figure 4, shows the tunable filters receiving the optical wavelength band from the optical couplers. Figure 5, shows tunable filters are located between two optical couplers. It is not clear how each filter receives the optical signal from the second optical coupler.

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 10, 13-21, and 23 are rejected under 35 U.S.C. 102(b) as being anticipated by Sichling (US patent No: 4,346,478).

Regarding claims 1, Sichling discloses a method of providing electrical power to multiple power consuming devices (col. 1, lines 15-31), comprising the steps of: interconnecting each of the power consuming devices (34, 36, 38, 40, fig. 1) to a fiber optic line (6, fig. 1) so that each of the power consuming devices is selectable for operation thereof by transmitting one of multiple optical wavelength bands (8, fig. 1 and 8, 86, 88, fig. 5) through the fiber optic line (col. 6, lines 6-14), and wherein each of the transmitted optical wavelength bands causes a respective one of the power consuming devices to be selected (col. 6, lines 31-40, col. 9, lines 63-67), and transmitting various optical wavelength bands through the fiber optic line (col. 9, lines 56-68, col. 10, lines 1-5) thereby, supplying power to corresponding selected ones of the power consuming devices (col. 7, lines 21-45).

Regarding claim 10, Sichling discloses simultaneously transmitting multiple ones of the optical wavelength bands (col. 9, lines 56-60).

Regarding claim 13, Sichling discloses optical couplers (14, 16, 18, fig. 1) for receiving separate optical wavelength bands from respective tunable laser (col. 9, lines 64-65 and 10, 86, 88, fig. 5).

Regarding claim 14, Sichling discloses providing electrical power by electrical connections between one power supply and one power consuming device (col. 6, lines 36-40, col. 7, lines 21-45 and 34, fig. 3).

Regarding claim 15, Sichling discloses the electrical connection step is performed by supplying electrical power from an opto-electric converter (46, fig. 3) to a switch (col. 7, lines 46-68, col. 8, lines 1-10 and 70, fig. 3) of the selected power consuming device (34, fig. 3).

Regarding claim 16, Sichling discloses transmitting data to the corresponding selected

one of the power consuming devices (col. 9, lines 63-68, col. 10, lines 2-5).

Regarding claims 17-18, Sichling discloses transmitting data in the digital form or analog form (col. 5, lines 15-19).

Regarding claims 19-20, Sichling discloses the power consuming devices are data storage devices (col. 14, lines 15-18) having programmed functions (col. 6, lines 1-2, 26-30).

Regarding claims 21 and 23, Sichling discloses multiple ones of sensors (34, 36, 38, fig. 1) are interconnected to the fiber optic line (6, fig. 1)

5. Claims 1-7, 9-13, 16-18, 24-31, 34-35, 38 are rejected under 35 U.S.C. 102(b) as being anticipated by Pan (US patent No: 6,038,357).

Regarding claims 1 and 24, Pan discloses a method of providing electrical power (col. 3, lines 14-15) to multiple power consuming devices (19A, fig. 1A), comprising the steps of: interconnecting each of the power consuming devices (col. 3, lines 15-17) to a fiber optic line (15 fig. 1A) so that each of the power consuming devices is selectable (17A, fig. 1A) for operation thereof by transmitting one of multiple optical wavelength bands (λ1, λ2, λ3, fig. 1A and col. 3, lines 18-25) through the fiber optic line (15, fig. 1A), and wherein each of the transmitted optical wavelength bands (λ1, fig. 1A) causes a respective one of the power consuming devices (19A, fig. 1A) to be selected (col. 3, lines 43-53), and transmitting various optical wavelength bands (λ1, λ2, fig. 1A) through the fiber optic line (col. 3, lines 43-46) thereby, supplying power to corresponding selected ones of the power consuming devices (col. 3, lines 55-60). As to claim 24, Pan discloses multiple control modules (18A, fig. 1A) that is being operative to select a respective power consuming device (col. 3, lines 50-60).

Regarding claim 2, Pan further discloses selecting (17A, fig. 1A) a first one of the power consuming devices (19A, fig. 1A) by transmitting light having a first wavelength (λ1, fig. 1A) and transmitting light having a second wavelength (λ2, fig. 1A) thereby selecting a second one of the power consuming devices (19A, fig. 1A).

Regarding claim 3, Pan further discloses interconnecting control modules (17A, 17B, fig. 1A) between each power consuming devices (19A, 19B, fig. 1A) and the fiber optic line (15, fig. 1A).

Regarding claim 4, Pan further discloses the control modules is responsive to the corresponding optical wavelength band of the respective power consuming device (col. 3, lines 11-17).

Regarding claim 5, Pan further discloses the light output from each control module is converted to electrical power (col. 3, lines 53-59).

Regarding claim 6 and 31,Pan further discloses interconnecting one of multiple WDM drops (17A, fig. 1A) between the fiber optic line and each power consuming device (col. 3, lines 43-50).

Regarding claim 7, Pan further discloses opto-electric converters (18A, 18B, fig. 1A) between each WDM drop (17A, 17B, fig. 1A) and the respective power consuming device (19A, 19B, fig. 1A).

Regarding claims 9, 27-28 as it is understood, and 34-35, Pan further discloses multiple optical couplers (14, 16, fig. 1A), optical filters (col. 3, lines 50-53 and 17A, fig. 1A). As to claim 35, Pan discloses opto-electric converters (18A, fig. 1A) between the optical filter (17A, fig. 1A) and the device (19A, fig. 1A).

Regarding claims 10 and 26, Pan further discloses simultaneously transmitting multiple ones of the optical wavelength bands (col. 2, lines 50-60).

Regarding claim 11, as it is understood, Pan further discloses the first optical coupler (14, 16, fig. 1A) that receives separate optical wavelength bands (10A, 10B, fig. 1A).

Regarding claims 12 and 28, as it is understood, Pan further discloses a tunable filter (105A, fig. 9A) is interconnected between a first optical coupler (104, fig. 9A) and a second optical coupler (101, fig. 9A).

Regarding claims 13 and 29, Pan further discloses the optical coupler (14, 16, fig. 1A) receiving separate optical wavelength bands from respective multiple tunable lasers (10A, 10B, fig. 1A).

Regarding claim 16, Pan further discloses transmitting data to the corresponding selected ones of the power consuming devices (col. 3, lines 35-42, 55-60).

Regarding claims 17-18 and 38, Pan further discloses the data is analog or digital (col. 4, lines 20-26).

Regarding claim 25, Pan further discloses optical wavelength bands are transmitted singly through the fiber optic line (col. 3, lines 66-67, col. 4, line 1).

Regarding claim 30, Pan further discloses a tunable laser (col. 4, lines 21-25).

Regarding claim 34-35, Pan further discloses an optical coupler (17A, fig. 1A) interconnected to the fiber line (15, fig. 1A) and an optical filter interconnected between the coupler and the respective power consuming device (col. 3, lines 50-55).

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 44, 48-49, 52-53, and 56-61 are rejected under 35 U.S.C. 103(a) as being unpatentable over Didden et al. (US patent No: 6,271,766).

Regarding claim 44, Didden discloses a well tool control system (20, fig. 1) for selectively supplying electrical power to multiple electrical power consuming well tools (col. 2, lines 53-54, col. 4, lines 6-10) in a subterranean well (col. 4, lines 1-5 and 15, fig. 1), comprising: a fiber optic line extending in the well (col. 3, lines 29-32 and 10, fig. 1), and multiple control modules interconnected to the fiber optic line (col. 3, lines 34-42, fig. 1), wherein each of the control modules is responsive to one of multiple optical wavelength bands ($\lambda 1$, $\lambda 2$, $\lambda 3$, fig. 1) transmitted through the fiber line (col. 4, lines 10-18). Didden differs from the claimed invention in that Didden does not specifically disclose multiple opto-electric converters. Didden discloses a sensor may be de-selected, for example by not illuminating the sensor at its characteristic wavelength, or by not converting the optical signals from such sensor to electrical signals, or by not providing sensor output data to a remote link, or by otherwise interrupting the sensor output data to a user (col. 2, lines 48-54). Therefore, it would have been obvious to an artisan at the time of invention that each of the sensors in the measurement system of Didden has an opto-electric converter in order to provide the sensor output data to a remote link or to a user for further signal processing and measurement.

Regarding claims 48-49, Didden discloses the multiple optical wavelength bands are transmitted singly, or simultaneously through the fiber (col. 4, lines 6-7, 30-32).

Regarding claim 52, Didden discloses optical coupling for the optical wavelength bands (col. 3, line 35, col. 4, lines 22, 30-32).

Regarding claim 53, Didden discloses a tunable laser (col. 4, line 31-32, col. 7, lines 50-53).

Regarding claim 56, Didden discloses the electrical power is supplied to the selected well tools in a manner which transmits data in a selected one of digital or analog form (col. 5, lines 60-65).

Regarding claims 57-58, Didden discloses the well tools are data storage devices (col. 6, lines 41-50).

Regarding claims 59 and 61, Didden discloses there are multiple sensors interconnected in the fiber line (col. 3, lines 34-35).

Regarding claim 60, Didden discloses the sensor includes an intrinsic fiber Bragg grating (col. 3, lines 38-39, 43-67).

8. Claims 6, 9, 11-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sichling (US patent No: 4,346,478) in view of Chown (US patent No: 4,182,935).

Regarding claims 6, 9, and 11-12 as it is understood, Sichling differs from the claimed invention in that Sichling does not disclose multiple optical filters between power consuming devices and the optical couplers. Chown discloses an optical fiber transmission system (fig. 5) that is comprised of a transmitter (11, fig. 2 and 20, fig. 5), a fiber line (13, figs. 2, 5), a first

coupler (14, figs. 2, 5), a plurality of optical filters (col. 3, lines 16-20), and a plurality of optical sensors (16, fig. 2 and R, fig. 5). Therefore, it would have been obvious to an artisan at the time of invention to incorporate optical coupler and filters such as the ones of Chown for optical coupling in the transmission system of Sichling in order to selectively pass or prevent the transmission of a wavelength band to a respective sensor for further signal processing and measurement.

9. Claims 8 and 32-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pan (US patent No: 6,038,357) in view of Otani et al. (US patent No: 6,115,156).

As to claims 8, and 32-33, Pan differs from the claimed invention in that Pan does not disclose the WDM drops include an optical circulator and a Bragg grating. Otani discloses a WDM demultiplexer (col. 2, lines 29-40, 63-65, and 19, fig. 1) that includes an optical circulator (27, fig. 2) and a Bragg grating (28, fig. 2). Therefore, it would have been obvious to a person of ordinary skill in the art at the time of invention to incorporate a demultiplexer such as the one of Otani for the demultiplexer in the optical transmission system of Pan in order to selectively pass or prevent the transmission of a wavelength band for further signal processing.

10. Claims 14-15, 19-20, 36-37, and 39-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pan (US patent No: 6,038,357) in view of Endo et al. (US patent No: 4,495,421).

As to claim 14-15, and 36, Pan differs from the claimed invention in that Pan does not disclose supplying electrical power from the opto-electric converters to a switch for each of the

selected ones of the power consuming devices. Endo discloses an optical power supply switching apparatus (col. 1, lines 5-15, col. 3, lines 38-55 and 30, 2, fig. 2), wherein a plurality of optical wavelength filters (12-1, 12-2, 12-3, fig. 4) are connected to respective switching units (30-1, 30-2, 30-3, fig. 4), and to electrical appliances (2-1, 2-2, 2-3, fig. 4). Therefore, it would have been obvious to a person of ordinary skill in the art at the time of invention to incorporate an opto-electric conversion and switching units such as the ones of Endo for the opto-electric conversion units in the receiving system of Pan in order to selectively receive a particular wavelength and to further electrically control a switching on and off of a desired one of the electrical devices.

As to claim 19-20, and 39-40, Endo further discloses the power consuming devices are data storage devices (col. 1, lines 7-28, col. 2, lines 31-37), or devices having programmed functions (col. 1, lines 50-54).

As to claim 37, Endo discloses the switch is a field effect transistor (col. 3, line 40).

11. Claims 21-23 and 41-43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pan (US patent No: 6,038,357) in view of Glomb et al. (US patent No: 5,077,816).

As to claim 21-23 and 41-43, Pan differs from the claimed invention in that Pan does not disclose multiple ones of sensors are interconnected in the fiber optic line. Glomb discloses a fiber embedded grating frequency standard optical communication devices (col. 3, lines 10-45), wherein multiple ones of sensors are interconnected in the fiber optic line (col. 4, lines 20-66 and 17'a, 17'b, 17'p, figs. 4, 5). Therefore, it would have been obvious to a person of ordinary skill in the art at the time of invention to incorporate an optical fiber transmission line with optical fiber grating such as the ones of Glomb for the optical fiber line in the optical transmission system of

Pan in order to precisely tune the optical transmission channels to a desired closely spaced communication channels.

12. Claims 45-47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Didden et al. (US patent No: 6,271,766) in view of Otani et al. (US patent No: 6,115,156).

Regarding claims 45-47, Didden differs from the claimed invention in that Didden does not disclose a WDM drop including an optical circulator and a Bragg grating interconnected between the fiber optic line and the respective well tool. Didden discloses a plurality of sensors that each may be similar to any fiber optic grating based sensor (col. 3, lines 38-39), and further discloses multiplexing techniques may be used to distinguish one sensor from another sensor, and the characteristic or reflection wavelength of the grating in each sensor may be different (col. 4, lines 41-48). Otani discloses a WDM demultiplexer (col. 4, lines 15-37 and 19, fig. 1) that includes an optical circulator (27, fig. 2) and a Bragg grating (28, fig. 2). Therefore, it would have been obvious to a person of ordinary skill in the art at the time of invention to incorporate a WDM demultiplexer that includes an optical circulator and a Bragg grating such as the one of Otani for each of the fiber optic grating based sensor of Didden in order to selectively pass or prevent the transmission of a wavelength band to respective sensors for further signal processing and measurement.

13. Claim 50 is rejected under 35 U.S.C. 103(a) as being unpatentable over Didden et al. (US patent No: 6,271,766) in view of Chown (US patent No: 4,182,935).

Regarding claim 50, as it is understood, Didden differs from the claimed invention in that Didden does not disclose multiple tunable filters and a first optical coupler interconnected to the fiber line. Chown discloses an optical fiber transmission system (fig. 5) that is comprised of a transmitter (11, fig. 2 and 20, fig. 5), a fiber line (13, figs. 2, 5), a first coupler (14, figs. 2, 5), a plurality of optical filters (col. 3, lines 16-20), and a plurality of optical sensors (16, fig. 2 and R, fig. 5). Therefore, it would have been obvious to an artisan at the time of invention to incorporate an optical coupler and filters such as the ones of Chown for the optical transmission system of Didden in order to selectively pass or prevent the transmission of a specific wavelength band to a respective sensor for further signal processing.

14. Claims 54-55 are rejected under 35 U.S.C. 103(a) as being unpatentable over Didden et al. (US patent No: 6,271,766) in view of Sichling (US patent No: 4,346,478).

Regarding claim 54, Didden differs from the claimed invention in that Didden does not disclose the opto-electric converter is connected to a switch. Sichling discloses a fiber optic sensor system (34, 36, 38, fig. 1) for transmission of information from one location to another (col. 2, lines 50-56), wherein the sensor system includes an opto-electric converter (34, 46, fig. 3) that is connected to a switch (70, fig. 3). Therefore, it would have been obvious to a person of ordinary skill in the art at the time of invention to incorporate a sensor system with opto-electric conversion circuitry such as the one of Sichling for the optical sensors in the measurement system of Didden in order to provide an electric signal representing the transmitted data, or to generate an electric signal for energizing a device.

Regarding claim 55, Sichling discloses the switch is a field effect transistor (col. 8, lines 9-10).

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to M. R. Sedighian whose telephone number is (703) 308-9063. The examiner can normally be reached on M-F (from 9 AM to 5 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on (703) 305-4729. The fax phone numbers for the organization where this application or proceeding is assigned is (703) 872-9314.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-4700.

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